

Notice of Allowability

Application No.

09/604,796

Examiner

Timothy L Rude

Applicant(s)

KIM ET AL.

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 01 October 2004.
2. ☒ The allowed claim(s) is/are 1-37.
3. ☒ The drawings filed on 27 June 2000 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 20040806
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

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DETAILED ACTION

Claims

Claims 1, 9, and 20 are amended.

Allowable Subject Matter

Claims 1-37 are allowed.

The following is an examiner's statement of reasons for allowance:

As to claims 1, 9, and 20, relevant prior art of record did not disclose, alone or in combination, a multi-domain liquid crystal display device as claimed comprising: a first dielectric frame and a second dielectric frame wherein the first and second dielectric frames are located exclusively in regions other than where the pixel region is formed.

Yamada discloses [Figure 15 that is a variation of Figures 10A-10D (col. 19; line 40 through col. 27, line 35)] a multi-domain liquid crystal display device comprising:

first and second substrates [32 and 34] facing each other and having a pixel region [pixel region];

a liquid crystal layer [42] between the first and second substrates;

a first dielectric frame [36, (OMR83, col. 26, lines 45-62)] on one side of the pixel region [pixel region in 10C];

a second dielectric frame [36, (OMR83, col. 26, lines 45-62)] on one side of the pixel region [pixel region in 10C]; and

a dielectric protrusion [dielectric convex portion, 69, Figure 15 (col. 26, lines 45-62)] between the first and second dielectric frame;

wherein said first and second dielectric frames distort electric field applied to the liquid crystal layer [inherent to dielectric material, OMR83, per Onishi], and an alignment layer, 38a and 38b, on at least one substrate between said first and second substrates.

Note: The use of a dielectric material such as OMR83 for distorting the electric field was well known to those having ordinary skill in the art of liquid crystals at the time the claimed invention was made, however, in support of the fact that OMR83 is a dielectric that causes distortion of applied electric fields in LCD with liquid crystal material having negative dielectric anisotropy, Onishi is cited. Onishi [Figures 8 and 9C, col. 20, lines 30-42 and col. 28, lines 8-19] discloses the use of OMR83 structures to create multi-domain effects wherein the LC layer thickness is not greatly reduced and where reduced layer thickness is not cited as a causal effect. The OMR83 structures of Onishi are considered to be functionally the same as those of Applicant, and they are considered to confirm the structures of Yamada do distort the electric field.

Therefore, Yamada discloses a first dielectric frame on one side of the pixel region; a second dielectric frame on another side of the pixel region; and a dielectric protrusion between the first dielectric frame and the second dielectric frame.

Yamada does not explicitly disclose a second dielectric frame which extends from the first substrate to the second substrate and/or acts as a spacer.

Colgan teaches in Figures 21A-24 that a ridge, 706, 720, or 724 (Applicant's dielectric frame and/or insulating protrusion), for pretilt control (Abstract, col. 3, lines 34-

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51, col. 6, lines 49-53, and col. 7, lines 29-57) may be used as spacers (instead of other spacers, 726, or with spacers, 726) to form the appropriate cell gap, G (col. 15, lines 12-33).

However, no reference was found to teach modification of Yamada to result in the claimed dielectric frames located exclusively in a region other than where said pixel electrode is formed.

European Patent Application Publication EP 0884646 and Horie et al USPAT 5,673,092 [both provided by Applicant] teach the use of physical barriers with and without alignment surface properties, but they do not provide a motivation to modify dielectric structures to result in the claimed invention.

As to claims 2-8, 10-19, and 21-37, they are directly or indirectly dependent upon claims with allowable subject matter above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

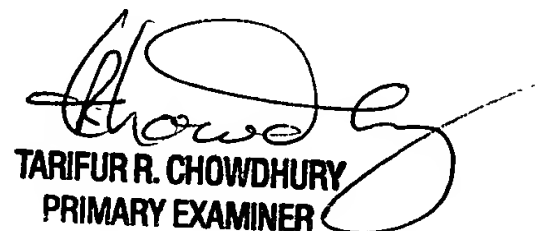
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



tlr

Timothy L Rude
Examiner
Art Unit 2883



TARIFUR R. CHOWDHURY
PRIMARY EXAMINER